## Contributions from the Alabama Biological Survey.—I.

In January, 1897, the Alabama Biological Survey was formed by the voluntary association of those members of the faculty of the Alabama Polytechnic Institute, and of the Experiment Station, who were interested in biological subjects. Its object is the study of the flora and fauna of the State in all their relations, but with special reference to geographical distribution of species, and to the relation between the life zones thus established and the agricultural capabilities of these different regions.

The great part of the time of the members of the survey is necessarily given to other work, but a satisfactory beginning has been made, and considerable collections have been secured in all groups of plants and of the lower animals. Most of the field work has so far been done in the neighborhood of Auburn in Lee County, but trips have also been made to the northern and southern portions of the State.

Under the general heading of Contributions it is proposed to publish from time to time, in suitable periodicals, such results of interest as may be secured either by the members of the survey or by specialists to whom material is submitted. These Contributions will also be issued as serially-numbered reprints. The following two mycological papers constitute the first number of this series. Other papers on the spiders and on the myriapods of the State are in preparation.

### 1. NEW OR NOTEWORTHY ALABAMA FUNGI.

By F. S. Earle.

#### Micropeltis Alabamensis sp. nov.

Epiphyllous: perithecia 300–400 $\mu$, scattered, convex, scutellate, orbicular, black, membranous, extending into a sterile border 100–200 $\mu$ wide consisting of agglutinated, branching, septate, guttate, fuliginous threads 3–5 $\mu$ in diameter; ostiolum conspicuous, depressed: asci numerous, irregularly clavate, stipitate, maturing in succession, 50–60 × 16–20 $\mu$, spore-bearing part about 40 $\mu$ long: sporidia inordinate, about 6-septate, cylindrical, ends rounded, little or not constricted, 25–30 × 5 $\mu$.

Following plant lice exudations on living leaves of *Magnolia Virginiana*, Auburn, Ala., April 11, 1896. Underwood & Earle. An undeveloped *Antennaria* occurs on the same leaves.

This is near *M. applanatus* Mont., but it seems to differ in the depressed ostiolum, the smaller asci and larger more frequently septate spores. Much confusion has resulted from the hasty and unwarranted reference of American material to foreign species. It seems better in every way to consider our species distinct until the contrary is clearly proven.

ANTHOSTOMELLA SPHAEROTHECA sp. nov.

Stroma thin, black, crust-like, containing 1–6 or 8, prominent, subconic perithecia, perithecial wall poorly developed, ostiolum very short-papillate: asci nearly orbicular, about 20 × 18 μ, aparaphysate, very thin and delicate, soon deliquescing and liberating the spores: sporidia oval or spindle-shaped, often inequilateral, ends acute, light fuliginous but transparent, the center usually occupied by a large oval vacuole, 16–18 × 5–6 μ.

On dead petioles of *Sabal Adansoni*, Tuskegee, Ala., Jan. 20, 1897. G. W. Carver (no. 101).

Externally this clearly resembles *A. minor* E. & M., but the asci in that species are cylindrical, and the spores only 7–8 μ long. The quickly evanescent asci are often hard to detect, a hasty examination giving the impression of a *Sphaeropsis*. The black, thin, crust-like stroma, and imperfectly developed perithecia suggest the Dothidiales, and it is possible that the species may ultimately be placed in *Auerswaldia*.

BOTRYOSPHAERIA ARUNDINARIAE sp. nov.

Stroma erumpent, pustular, bordered by the ruptured epidermis, small, usually about 1 mm., irregularly oval, black, stromatic material scanty: perithecia few, 2 or 3 to 6 or 8 in each stroma, soon partly exposed, black, carbonaceous, about 300 μ, with papilliform ostiolum: asci elongate, subcylindric, long-stipitate, 120 or more by 10–12 μ, paraphyses abundant, vague, minutely granular, 4–6 μ in diameter: sporidia subdistichous, continuous, hyaline, often granular and vacuolate, oval, often curved or inequilateral, ends acute, 20–25 × 6–8 μ.

On dead stems of *Arundinaria*, Tuskegee, Ala., Jan. 20, 1897. G. W. Carver (no. 110).

GNOMONIA SABALICOLA sp. nov.

Scattered or often gregarious, buried, but elevating the epidermis in grayish irregular blisters: perithecia depressed-globose, 300–400 μ; ostiolum black, long-exserted, slender, 500–700 μ: asci obtusely ovate, delicate and evanescent, about 70 × 20 μ, exceeded by the numerous, simple, thread-like, colorless paraphyses: sporidia 8, inordinate, uniseptate, obtuse, narrowly oval, cell contents honey yellow, with a thick, hyaline outer coating, 25–30 × 6–8 μ.

On dead petioles of *Sabal Adansoni*, Auburn, Ala., April 25 and July 9, 1896. Underwood & Earle.

This is sometimes accompanied by a *Sphaeropsis* with acute-ended spores measuring about 12 × 4 μ.

LEPTOSPHAERIA EUMORPHA (B. & C.) Earle.

*Sphaeria eumorpha* B. & C., Grev. **4**: 145.

*Sphaeria arundinacea* Rav. (not Sowerby) in Fung. Car. Exsic. **3**: 57.

*Sphaerella eumorpha* Cook, Jour. of Bot. 1873.

*Didymella eumorpha* Sacc. Syll. Fung. **1**: 560. Ellis & Ev. N. A. Pyr. 321.

*Didymosphaeria eumorpha* Atkinson, Bull. Cornell Univ. **3**: 6.

This abundant fungus presents such peculiar spore characters that it is not remarkable that its generic relationship has been misunderstood. When young the sporidia are hyaline, and are distinctly 3- or sometimes 5-septate. At maturity they become dark brown and densely opaque so that the septa are not visible. They are somewhat constricted at the middle septum, which gives the mature sporidium the effect of being only 2-celled as it has been always heretofore described. With careful illumination the additional septa can be seen after the spore has become quite darkly colored, but at full maturity they are completely obscured. In all other respects Atkinson's description is full and satisfactory. He is doubtless correct in referring our Alabama material as above, though Berkeley's remark (Grev. **4**: 145) that "There is another distinct species on *Arundinaria* from Alabama, but indescribable without sporidia," suggests the possibility of an error. Atkinson does not quote Massee's examination of the type except as to the color of the spores.

Ravenel, in Fung. Car. Exsic. **3**: 57, distributed a fungus on *Arundinaria* under the name of *Sphaeria arundinacea* Sow. In the copy that I have been able to examine, these specimens are identical with our Alabama material, and differ widely from European specimens of *Leptosphaeria arundinacea* (Sow.) Sacc. (See Thüm. Myc. Univ. 1256). Apparently the references to this as an American species in Sacc. Syll. Fung. **2**: 62, Ellis & Ev. N. A. Pyr. 371, and Farlow & Seymour Host Index 149, are all based on these South Carolina specimens, and if so this name should be dropped from lists of American fungi.

METASPHAERIA NIGROMACULANS sp. nov.

Forming blackened, irregularly oblong or elongated areas, 2–8 × 1–2 mm.: perithecia few, 1–6 in a spot, buried, thin-walled; ostiolum pustularly erumpent, 300–500 μ: asci 35–40 × 8 μ, thin-walled, clavate, short-stipitate, paraphyses thread-like, abundant: sporidia obliquely monostichous or inordinate, hyaline, yellowish at maturity, narrowly elliptical, ends subacute, 3-septate, 10–12 × 3–4 μ.

On dead stems of *Agave Virginica* Auburn, Ala., July 8, 1896. Underwood & Earle.

This differs from *M. Agaves* Roll. in the much smaller asci and spores, and in the spotting of the stem. The affected portion is bounded by a black circumscribing line within the stem.

PHYSALOSPORA PHILOPRINA (B. & C.) Sacc.

On *Ilex opaca*, Auburn, Ala., March 17, 1897. Earle & Baker.

This species was described (?) from North Carolina, Grev. **4**: 154, and it does not seem to have been since collected. Our specimen is determined with some doubt as the description is utterly insufficient for a proper identification. It affords the following characters:

Epiphyllous on large, dead, whitened, often apical areas, surrounded by a broad blackened border: perithecia buried, prominent, long covered by the whitened epidermis, under lens appearing dark with white center, rather small, 100–120 μ, epidermis at length cracking rimosely or stellately: asci oblong, about 40 × 8–9 μ: paraphyses thread-like, gelatinous, agglutinated: sporidia distichous or inordinate, narrowly oval, ends rounded, usually curved, guttate or coarsely granular, about 16 × 4 μ.

*Sporonema Ilicis* Earle, Bull. Torr. Bot. Club, **24**: 32, is probably a pycnidial form of this species.

TRICHOSPHAERIA UNDERWOODII sp. nov.

Perithecia black, superficial, collapsing, 300–400 $\mu$, ostiolum obscurely papillate, surface abundantly clothed with dark brown, continuous or sparingly septate, rigid but flexed hairs 100–300 × 3 : perithecia seated on a thin, dark brown mycelium consisting of scattered, interlacing, frequently septate threads, each cell of which has a conspicuous vacuole; rising from the mycelium are frequent, erect, rigid, septate setae 150–200 $\mu$ long by 5–6 $\mu$ at base and tapering upward to a point: asci cylindrical, 80–100 × 8 $\mu$, paraphyses vague and indistinct, slender, branching: sporidia 8, monostichous, oblong to narrowly oval, ends rounded, at length distinctly uniseptate and yellowish, about 20 × 4 $\mu$.

On dead stems of *Arundinaria*, Auburn, Ala., January 4, 1896. Underwood & Earle.

This differs from the description of *T. Arundinariae* E. & E., from Louisiana, in its collapsing perithecia which at first glance make it seem almost pezizoid, and in the smaller, uniseptate spores with rounded, not acute ends.

VALSARIA NUDICOLLIS (B. & C.) Sacc.

On the hardened outer surface of rotten pine wood, Auburn, Ala., March 21, 1896. L. M. Underwood.

This seems to be the first time that this interesting species has been taken since the type collection in South Carolina. Berkeley's description (Grev. **4**: 93) of the connate umber-brown perithecia with black ostiola forming an almost continuous crust fits our specimen so exactly that there seems no doubt of the determination. The following additional characters are noted:

Stroma reduced to a thin umber-brown coating: perithecia erumpent, crowded, forming a crust-like covering over considerable areas, or scattered in small groups, long partially covered by the whitened ruptured fibers of the surface wood, globose, 350–500 $\mu$; ostiolum prominent, black, shining: asci cylindrical, spore-bearing part about 60 × 6–7 $\mu$, paraphyses numerous, flat, twisted, about 80 × 4–5 $\mu$: sporidia 8, obliquely monostichous, regularly oblong-oval, ends obtuse, brown, equally uniseptate, about 10 × 5 $\mu$.

HYPOMYCES AURANTIUS (Pers.) Fckl.

In Ala. Exp. Sta. Bull. **80**: 185 this species is credited to

Alabama from the specimen on *Cantherellus aurantiacus* collected by Judge Peters and distributed in Rav. Fung. Car. Exsic. 5: 64 under that name. A recent examination of these specimens shows that they were wrongly determined. They are evidently only a form of *H. lactifluorum* (Schw.) Tul., which is exceedingly common throughout this region.

*H. aurantius* does however occur in this State. Fine specimens on *Polyporus resinosus* were collected at Auburn, February 22, 1896, by Underwood & Earle. These agree perfectly with Thüm. Myc. Univ. 1747 and with published descriptions. They are abundantly accompanied by the conidial form, *Diplocladium minus* Bon.

NECTRIA EPISPHAERIA (Tode) Fr.

This is a very abundant fungus in Alabama, occuring on various species of *Nummularia*, *Valsa*, *Ditrypella*, etc. From its abundance and the ease with which it adapts itself to different hosts we should expect it to be variable in its characters. The spores are described as unequally uniseptate and constricted. Quite as often they will be found to be equally uniseptate and not at all constricted, and in vigorous specimens it is not very unusual to find spores that are 2- or even 3-septate. The perithecium too, while normally smooth and greatly collapsed, is sometimes little or not at all collapsed and covered with a thin tuft of delicate, branching, anastomosing, appressed, orange-red hairs. These are about 3 $\mu$ in diameter and an occasional free end projects 8–12 $\mu$ beyond the perithecium. It is possible that the examination of a sufficiently large series of specimens would show that more than one species is confused under this name, but from present observations the characters tend to merge into each other so that it is impossible to separate the forms.

NECTRIA (EUNECTRIA) MELIAE sp. nov.

Cespitose, 3 or 4 to 12 or 16 on a prominent dark brown or blackish stroma .5–1 mm. in diameter by .5 mm. high: perithecia 300–400 $\mu$, dingy red, becoming dark brown with age, usually collapsing, surface marked with blunt subconic tubercles, not hairy: asci about 70–80 × 8–10 $\mu$: sporidia monostichous, slightly yellowish, ends subacute, 16–18 × 4–6 $\mu$: conidia abundant on the young stroma, about 6 × 1 $\mu$, little or not at all curved.

On dead twigs of *Melia Azedarach*, Auburn, Ala., March 13 1896. Underwood & Earle.

This is somewhat nearly related to *Nectria cinnabarina* (Tode) Fr., but it differs from Swedish specimens of that species collected by Fries and now in the Peters Coll. in its smaller and darker perithecia, and in the smaller, darker and much more prominent stroma.

*N. verrucosa* (Schw.) Sacc. is said to occur on *Melia* in South Carolina. Our specimens agree well with this in the peculia, roughening of the perithecia, and in the size and general appearance of the spores. The stroma is, however, entirely different, being vermilion red and flat or concave in that species, but dark brown and prominently wart-like in this one. The specimens of *N. verrucosa* that I have been able to examine were none of them on *Melia* but probably all on *Morus*.

AULOGRAPHUM CONFLUENS sp. nov.

On blackened areas: perithecia gregarious, black, slender, flexed and variously confluent, fragile, composed of loosely joined parallel threads, 400–800 × 40 μ, lips rather lax and open: asci oblong, very numerous, about 25–30 × 4–5 μ, paraphyses thread-like, enlarged above, much agglutinated and often indistinguishable: sporidia distichous or inordinate, oblong, ends obtusely rounded, nearly equally uniseptate, constricted, hyaline, about 6 × 3 μ.

On dead weathered stems of blackberry (*Rubus* sp.), Auburn, Ala., February 1, 1896. Underwood & Earle.

In extreme cases the patches of confluent perithecia remind one of *Glonium stellatum* in miniature. *Lophodermium rubiicolum* also occurs on the same canes.

LOPHODERMIUM RUBIICOLUM sp. nov.

Perithecia thickly scattered, sometimes crowded and occasionally confluent end to end, 1–2 × .25 mm., strongly convex and prominent, almost seeming superficial, dull black, straight or flexed, ends obtuse, lips prominent and somewhat widely opened: asci narrowly linear, about 60–70 × 4 μ: spores nearly equaling the ascus, light yellow, twisted, exceedingly slender, scarcely .75 μ in diameter.

On dead blackberry stems (*Rubus* sp.), Auburn, Ala. February and March, 1896. Underwood & Earle.

The prominent perithecia give this at first sight the look of an *Hysterium* rather than that of a *Lophodermium*. In the numerous specimens examined the asci were all in rather poor condition and the spore characters were difficult to make out. The paraphyses, if present, were so agglutinated as to be indistinguishable.

CERCOSPORA GNAPHALIACEA Cooke (?).

Spots none: hyphae collected in dense fascicles arising from a stromatic base, fascicles thickly scattered over considerable areas which they discolor, hyphae long, weak and flexed, but sparingly or not at all dentate, occasionally septate, in the dried specimens seemingly flattened and twisted, olivaceous, 100–200 or more by 4–5 : conidia, straight, cylindrical, 3-septate, granular, hyaline, about 40–50 × 5–6 μ.

On *Gnaphalium purpureum*, Auburn, Ala., February 21, 1897. Earle & Baker.

This is a peculiar species and it departs quite widely from the usual type of the genus. In general appearance it somewhat resembles *Scolecotrichum Euphorbiae* Tracy & Earle, on *Euphorbia*.

It is impossible to decide from Cooke's brief description whether or not this is the same as the Texas fungus collected by Ravenel. As the probabilities seem to lie in that direction it is provisionally so determined.

CERCOSPORA OMPHACODES Ell. & Holw.

On *Phlox maculata* Chambers County, Alabama, June 22, 1897. F. S. Earle.

Our specimens show no distinct spotting of the leaves such as is found in Canadian specimens on *Phlox divaricata*, N. A. F. 2975, and Louisiana specimens on *P. paniculata*, Langlois, no. 1365. The hyphae are hypophyllous and effused over considerable areas forming a cinnamon-brown coating. The leaf is only slightly discolored above. The spores and hyphae are much as in the other specimens mentioned, though the latter are perhaps less closely fascicled, and somewhat longer in the Alabama form. It should be noted that these specimens were taken in deep shady woods.

CERCOSPORA RIBIS sp. nov.

Spots definite, orbicular or irregular, 1–3 or 4 mm., white above, brown below, with dark brown narrow border: hyphae hypophyl-

lous, loosely fascicled, dark fuscous, long and slender, multiseptate, flexed and denticulate for the greater part of their length, 150–200 × 3–4 μ: conidia hyaline, long, slender, curved, clavate, tapering from 3–4 μ at the obtuse larger end to 1–2 μ at the smaller end, at first continuous, then multiseptate, 100–200 μ long.

On leaves of cultivated gooseberry (*Ribes* sp.), Auburn, Ala., July 18, 1896.

This conspicuous and well-marked species attacks the gooseberry foliage abundantly, causing it to fall prematurely. It is probably one of the causes for the failure of this fruit in this region.

PHYLLOSTICTA ARIDA sp. nov.

Spots orbicular or somewhat irregular, 3–6 mm., white, arid, with a narrow inconspicuous yellowish brown border: perithecia black, scattered, prominent on both sides of the leaf, 80–100 μ; sporules obtusely oval to ovate, thick-walled, contents granular, 8–10 × 6–7 μ.

On *Acer Negundo*, Auburn, Ala., June 5, 1897. Earle & Baker.

On some of the spots occurs also a *Discosia* with curved 3-septate spores about 12–14 × 3 μ, with a delicate seta attached near, but not at, each end.

PHYLLOSTICTA MACROGUTTATA sp. nov.

Spots orbicular, brown, sometimes becoming whitish, with a broad darker brown border, 1–2 mm., abundant, but usually not confluent: perithecia epiphyllous, few, 1–6 or 8 on each spot, black, prominent, about 80 μ: sporules elliptical, 6–7 × 5 μ, usually with a large conspicuous spherical vacuole 3.5–4 μ in diameter.

On *Meibomia* sp. Auburn, Ala., June 28, 1891. Atkinson. On *Meibomia Dillenii*, August 11, 1897. Earle & Baker.

The Atkinson specimen in this herbarium was labeled *P. Desmodii* E. & E. (?). On this authority this name was included in Prel. List Ala. Fungi, Exp. Sta. Bull. **80**: 167. It is also given from the same collection in Cornell Univ. Bull. **3**: 31. *P. Desmodii* is described with spores only 3.5 × 1.5 μ, which differs so widely from the large conspicuously guttate spores uniformly found in the Alabama specimens that I must consider ours to be distinct. The spots, too, in our specimens are much smaller and are seldom or never confluent. This being so, *P. Desmodii* should be dropped from the list of Alabama fungi.

SEPTORIA.

On *Silene Virginica*, Auburn, Ala., May 29, 1897. Earle & Baker.

Spots pallid, irregular, 2–8 mm., sometimes confluent, with an indistinct brownish border: perithecia scattered, abundant, black, thin-walled, with a large ostiolum, about 80 $\mu$: sporules cylindrical, straight or bent, ends rounded, continuous or at length uniseptate, 20–30 × 3 $\mu$.

This seems to differ from *S. silenicola* Sacc. (*S. Silenes* E. & M.), and *S. noctiflora* E. & K. in the darker perithecia and somewhat shorter and broader spores. Unfortunately the N. A. F. specimens of both these species to which I have access are sterile. The spotting of the leaves in both agrees quite closely with that produced by our fungus. The description of *S. dimera* Sacc. indicates that it is very near our form, but it is not recorded from this country and I have seen no specimens. It does not seem advisable to propose a new name for this form until it can be compared with good specimens of the three above-mentioned species.

## 2. NEW SPECIES OF ALABAMA FUNGI.

BY CHAS. H. PECK.

LEPIOTA LONGISTRIATA.

Pileus thin, convex or nearly plane, umbonate, hairy-squamulose, striate nearly or quite to the umbo, whitish or pale gray, brownish on the umbo; lamellae narrow, close, free, minutely floccose on the edge, yellowish white, becoming darker in drying; stem slender, hollow, tapering upward from a thickened base, the annulus delicate, evanescent; spores elliptical, 6–7.5 $\mu$ long, 4–5 $\mu$ broad.

Pileus 2.5–5 cm. broad; 5–7.5 cm. long, 2–6 mm. thick.

In gardens. July. F. S. Earle.

LEPIOTA EARLEI.

Pileus thin, broadly convex or nearly plane, umbonate, adorned with minute scurfy brown scales and whitish hairs, the margin striate and somewhat lacerate, whitish; the umbo glabrous, brown; lamellae numerous, thin, close, subventricose, free, white; stem slender, fibrous, hollow, tapering upward, enlarged at the base, the flesh changing to reddish where wounded; spores elliptical, 10–12.5 $\mu$ long, 6–7.5 $\mu$ broad.

Pileus 5–7.5 cm. broad; stem 5–7.5 cm. long, 4–6 mm. thick.

Newly cleared land; cespitose. August. Earle. "A very pretty and delicate species." It is smaller than *L. Americana* and has larger spores. The change in color is limited to wounded places.

LACTARIUS SALMONEUS.

Pileus rather thin, convex, becoming nearly plane or slightly depressed in the center, dry, subvelvety, sometimes irregular, white, becoming reddish where bruised; milk bright salmon color, taste mild, slightly aromatic; lamellae narrow, close, adnate or decurrent, bright salmon color; stem short, solid, central or occasionally eccentric, velvety, white, salmon color within; spores subglobose, 7.5–9 $\mu$ long.

Pileus 2.5–3.8 cm. broad; stem about 2.5 cm. long, 3–6 mm. thick.

Cespitose, in wet swampy places, usually on naked ground that has been overflowed. August. Earle & Baker.

A small but very distinct species easily recognized by the salmon color of the milk, and the change in the color of the bruised flesh.

LACTARIUS SUBVELLEREUS.

Pileus fleshy, firm, broadly umbilicate or centrally depressed, becoming somewhat infundibuliform, downy-tomentose, white, often with yellowish stains or becoming yellowish or tawny-yellow with age, the margin at first strongly involute, milk abundant, pale creamy-yellow, taste very acrid; lamellae narrow, crowded, often forked, adnate or slightly decurrent, pale creamy yellow, becoming tawny where wounded; stem short, equal or tapering downward, solid, white, downy; spores subglobose, about 7.5 $\mu$ long

Pileus 7.5–15 cm. broad; stem 1.8–4.8 cm. long, 1.2–2.5 cm. thick.

Dry ground in mixed woods. August. Earle.

The species is similar to *L. vellereus* in the soft downy or velvety coating of the pileus and stem, but differs from it in the narrow crowded lamellae and the color of the milk. This last character and the downy surface of the pileus and stem separate it from *L. piperatus*. It appears to combine the characters of these two species. The acrid taste persists in the mouth a long time.

RUSSULA POLYPHYLLA.

Pileus convex and centrally depressed or subinfundibuliform, glabrous, somewhat areolate, pale flesh color, odor strong, taste mild; lamellae numerous, narrow, close, adnate or subdecurrent, dingy flesh color; stem equal, hollow, colored like the pileus; spores subglobose, about 7.5 $\mu$ long, 6–7.5 $\mu$ broad.

Pileus 7.5–12.5 cm. broad; stem 5–7.5 cm. long, 1.2–2.5 cm. thick.

Woods. July. Earle.

RUSSULA ALBIDULA.

Pileus broadly convex or nearly plane, glabrous, white, even on the margin, flesh white, taste acrid; lamellae moderately close, adnate or slightly decurrent, some of them forked at or near the stem, white, the interspaces venose; stem equal, even, solid, white; spores subglobose, 7.5–10 $\mu$ long, 6–7.5 $\mu$ broad.

Pileus 2.5–5 cm. broad; stem 2.5–3.8 cm. long, 8–12 mm. thick.

Pine woods. November. Earle.

The whole plant is white when fresh, but in dried specimens the pileus and lamellae are sometimes tinged with yellow. The species may be separated from *R. lactea* by its acrid taste, from *R. virginea* by its acrid taste and larger spores and from *R. anomala* by the even margin of the pileus.

OMPHALIA EXIMIA.

Pileus thin, infundibuliform or deeply umbilicate, glabrous, white, becoming grayish-white in drying, the thin margin spreading or deflexed; lamellae rather narrow, subdistant, very decurrent, white; stem slender, equal or slightly enlarged above, glabrous, hollow, white; spores subglobose, 4–5 $\mu$ broad.

Pileus 1.2–3.2 cm. broad; stem 2.5–5 cm. long, 2–3 mm. thick.

Decaying wood. July. Earle.

The species appears to be related to *O. euomphalos*. In that species the pileus in the dried specimens is said to be brownish-red. In this, the pileus and stem are grayish white and the lamellae are dingy ochraceous-buff.

PANUS NIGRIFOLIUS.

Pileus 1–2 cm. broad, thin, dimidiate, sessile, dry, pulverulent

or minutely subtomentose, at length distantly striate, rufescent; lamellae distant, unequal, blackish-brown.

On alder. July. Earle.

From *P. operculatus*, which also grows on alder, this species may be separated by the soft pulverulent coating of the pileus, by the lateral attachment of the pileus and by the very dark or almost black color of the lamellae. Spores not seen.

BOLETUS LEPTOCEPHALUS.

Pileus thin, broadly convex or nearly plane, dry, minutely rimose, especially near the margin, light tawny-brown, sometimes tinged with reddish-brown, flesh yellowish-white, taste at first mild, then slightly acrid; tubes subventricose, depressed about the stem, nearly free, dingy olive-yellow, the mouths small, subrotund; stem nearly equal, enlarged at the top, solid, glabrous or slightly pruinose-mealy, reticulated above, colored like the pileus, white within, with a white mycelium at the base; spores greenish-olivaceous, fusiform, 12.5–17.5 $\mu$ long, 5–6 $\mu$ broad.

Pileus 10–12.5 cm. broad; stem 10–12.5 cm. long, 1.2–1.6 cm. thick.

Dry, open woods. July. Earle.

The reticulation of the upper part of the stem appears to be formed by the decurrent walls of the tubes. The species belongs to the tribe *Edules*.

THELEPHORA GRACILIS.

Stems scattered, branched above, slender, tough, the branches slender, subterete, sometimes slightly channeled on one side, once or twice forked, the tips acute, becoming brownish with age, the stem and branches whitish; spores oblong, 12.5–15 $\mu$ long, 4–5 $\mu$ broad.

Plant 3.7–5 cm. high, stem about 2 mm. thick.

Moist ground. July. Earle.

The species is related to *T. Schweinitzii*, from which it differs in habit, in its slender and nearly terete branches and in its spores.

CLAVARIA LONGICAULIS.

Stem slender, solid, sparingly and irregularly branched above, the branches rather long, simple or sparingly branched, the tips blunt, the whole plant dark brown when fresh, externally dark ochraceous when dry, longitudinally and somewhat irregularly

wrinkled; spores ochraceous, ovate or subelliptical, minutely roughened or echinulate, 6–7.5 μ long, 4–5 μ broad

Plant 3.7–5 cm. high; stem about 2.5 cm. long, –2.4 mm. thick.

Moist ground. July. Earle.

A well-marked and peculiar species readily known by its long stem, uniform dark brown color fading externally in the dry plant to ochraceous and by the longitudinally wrinkled stem and branches.